Docket No.: 29827/40753
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Thomas Daniel et al.

Application No.: 10/521,292 | Confirmation No.: 1444

Filed: January 11, 2005 | Art Unit: 1713

For: Method for Producing Polymers | Examiner: M. Bernshteyn

REPLY BRIEF

MS Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This reply brief is submitted to respond to points of argument and to correct erroneous statements made in the Examiner's Answer dated September 10, 2007 to applicants' Appeal Brief.

(1) At page 5 of the Examiner's Answer, the examiner states that "all limitations of the instant claims 1-5 and 9-10 are expressly met by Tsubakimoto". The examiner supports this statement in part by stating at page 4 of the Examiner's Answer "[T]hat's why in the acrylate salt monomer (B) the proportion of the alkali acrylate may be *100 mol%* (col 3, lines 20-30)" (emphasis added). By this statement, the examiner continues to confuse degree of acrylic acid neutralization (DN) with using a *solid* sodium acrylate in a polymerization process to provide an SAP hydrogel. A *solution* of acrylic acid can be neutralized 100 mol % (DN=100) and the resulting sodium acrylate can *still* be in solution. In fact, an acrylic acid solution can be neutralized from DN=0 (i.e., totally unneutralized) to DN>100 (i.e., a mole excess of sodium hydroxide) and still be a solution. The DN of acrylic acid is totally unrelated to the physical state of the acrylic acid. The present claims recite the use of a *solid* sodium acrylate, which is different from degree of neutralization. A sodium

acrylate of DN=100 can be prepared *in situ*, then polymerized, as disclosed in the cited U.S. Patent No. 4,286,082. Alternatively, and as presently claimed, a 100 mol % sodium acrylate solution can be prepared, the sodium acrylate isolated from that solution, then (as claimed) the resulting solid sodium acrylate can be redissolved and used in a polymerization process to provide an SAP hydrogel. Accordingly, the examiner's attempt to equate 100 mol % neutralized acrylic acid to *solid* sodium acrylate to support an anticipation rejection under 35 U.S.C. §102 is incorrect.

(2) The examiner supports the rejection of claims 6 and 7 over U.S. Patent No. 4,286,082 at page 5 and 6 of the Examiner's Answer by stating:

> "Therefore, it is reasonable to believe that the aqueous monomer solutions for producing a sodium acrylate polymer in view of substantially identical monomer **(sodium acrylate)** and the solvent **(water)** (compare US'082, page 6, Table and the specification, page 12, tables 1 and 2) being used by both Tsubakimoto and the applicant are identical. Since the USPTO does not have proper equipment to do the analytical test, the burden is now shifted to the applicant to prove otherwise." (Examiner's Answer, page 6)

This paragraph shows a misunderstanding of the claimed invention by the examiner. Claims 6 and 7 recite amounts of moisture in the *solid* sodium acrylate, i.e., anhydrous in claim 6 and 0.1% to 10%, by weight, water in claim 7, *prior* to addition to water to form a monomer solution. The *solid* sodium acrylate of claims 1, 6, and 7 is added to water, together with acrylic acid, a crosslinker, etc., to provide an aqueous solution for polymerization. Applicants do *not* claim and do *not* argue that this *aqueous* solution is different from an aqueous solution of U.S. Patent No. 4,286,082. Appellants *do* claim, and *do argue* the patentability of, the addition of a *solid* sodium acrylate to water to form the aqueous monomer solution (as opposed to an *in situ* preparation of sodium acrylate in aqueous solution and its use, without isolation, in a polymerization reaction). The PTO requires no equipment to differentiate the aqueous monomer solutions, nor to analyze the clearly claimed solid sodium acrylate of claims 6 and 7. The moisture amounts are clearly stated.

(3) At page 7 of the Examiner's Answer, the examiner states:

> "Regarding Applicants argument that the examiner misreads the meaning of "100 mol% of an alkali metal acrylate" (page 12, the last paragraph), it is noted that the '082 patent states that absorbent resin compositions obtained by copolymerizing in an aqueous solution a mixture of **100 parts by weight** of an acrylate salt monomer (B) and 0.001 to 5 part by weight of a crosslinkable monomer (abstract)."

In this statement, the examiner is equating two entirely different parameters. Paragraph (1) above addresses the 100 mol% question, i.e., a 100 mol% neutralized acrylic acid can be in solution or can be a solid. This in no way relates to polymerizing an aqueous mixture containing 100 parts by weight of an acrylate salt monomer. One parameter relates to the degree of neutralization of the acrylic acid; the second parameter relates to the *amount* of neutralized acrylic acid present in the monomer mixture. In fact, the phrase "100 parts by weight of an acrylate salt monomer" as used in U.S. Patent No. 4,286,082 is merely a relative term disclosing the weight amount crosslinkable monomers present in the monomer mixture per 100 parts by weight of acrylate salt.

(4) At page 7 of the Examiner's Answer, the examiner states: "Furthermore, it is worth to mention that sodium acrylate has the concentration of 97%, therefore it is practically solid (see www.sigma-aldrich.com)". In fact, sodium acrylate at 97% *is* a solid. Appellants are not claiming solid sodium acrylate, but the *use* of solid sodium acrylate in the preparation of an SAP hydrogel, which is neither taught nor suggested in U.S. Patent No. 4,286,082.

(5) The examiner asserts that appellants have not performed a comparative test to sufficiently close prior art to support the nonobviousness of the claimed invention. Appellants strongly traverse this contention. First, the examiner states, at page 7 of the Examiner's Answer,

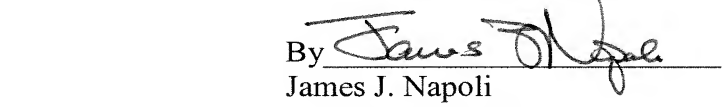
> "there are only two main ways of the preparation of an aqueous solution of sodium acrylate:
> 1. mixing aqueous sodium hydroxide with acrylic acid, or
> 2. dissolving commercially available solid sodium acrylate, 97% [7446-81-3] (acrylic acid, sodium salt), FW 94.05, mp>300°C in an aqueous medium."

The first "main" way is used in the standard method of preparing an SAP hydrogel, as set forth in U.S. Patent No. 4,286,082. The second "main" way is the claimed method of preparing an SAP hydrogel, although the solid sodium acrylate need not be commercially obtained. Therefore, comparing the claimed method ("main" way 2) to mixing aqueous sodium hydroxide with acrylic acid ("main" way 1) *is* a comparison of the claimed invention to the closest prior art. Appellants have performed this comparative, as set forth in the specification, pages 5-7, in Comparative Example 1 and Example 1. In Comparative Example 1, the acrylic acid is neutralized in solution (i.e., prior art, "main" way 1.). In Example 1, *solid* sodium acrylate is used, (i.e., claimed method, "main" way 2.). An SAP hydrogel prepared by the claimed method of Example 1 exhibits a reduction in residual acrylic acid monomer of 190 ppm (570 ppm down to 380 ppm, or a 33.3% decrease) and an improvement in color numbers toward white in the color space (i.e., color numbers L, a, and b in Example 1 are each closer to zero, i.e., closer to white) compared to an SAP hydrogel prepared by the standard prior art method of U.S. Patent No. 4,286,082. Accordingly, appellants have demonstrated unexpected results over the closest prior art.

In summary, it is submitted that the examiner's final rejection of claims 1-5 and 8-10 should be reversed.

Dated: November 5, 2007

Respectfully submitted,

By 

James J. Napoli
Registration No.: 32,361
MARSHALL, GERSTEIN & BORUN LLP
233 S. Wacker Drive, Suite 6300
Sears Tower
Chicago, Illinois 60606-6357
(312) 474-6300
Attorney for Applicant